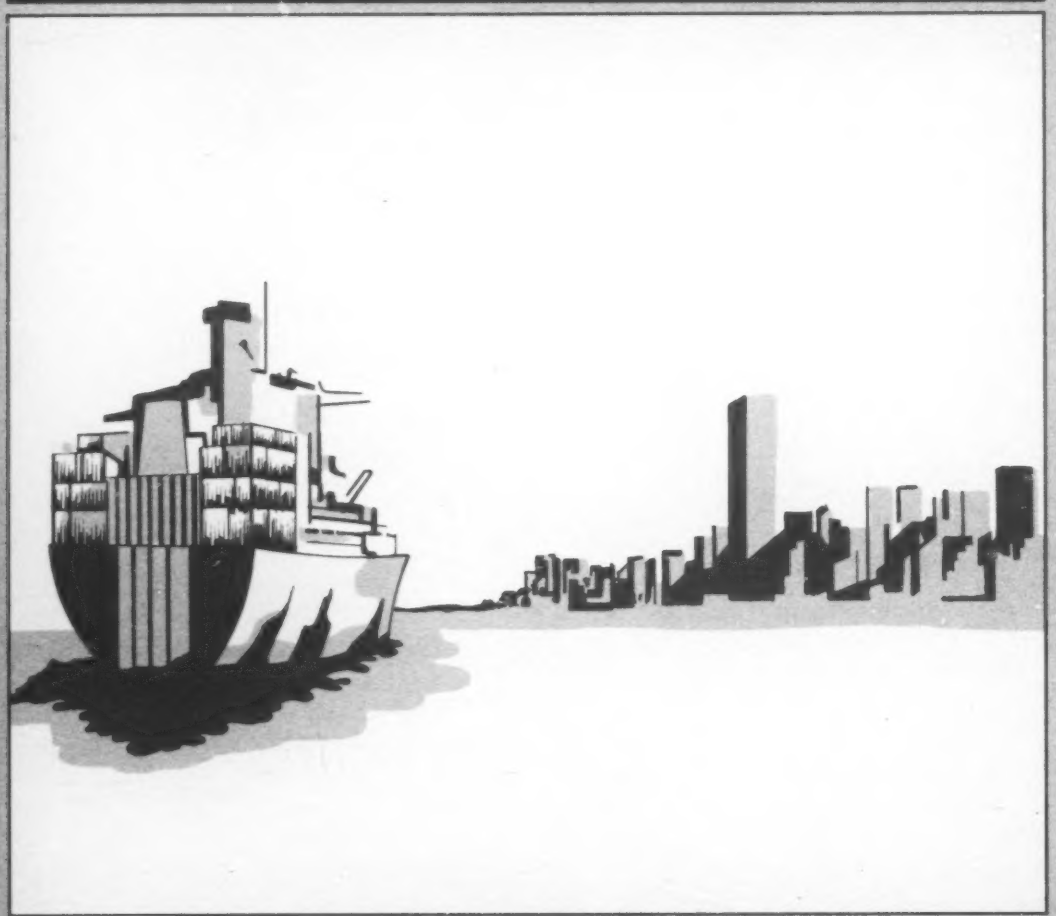
An Assessment of Maritime Trade and Technology



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Foreword

World trade now totaling nearly $2 trillion—a fourfold increase in the past two decades—has become a dominant factor in the economic performance of both industrialized and developing countries. The international shipping industry exists to serve that trade. In the past two decades its capacity has grown almost 250 percent, as well as changed in character in response to new trading conditions and cargo demand. However, both trade and shipping volume reached a plateau in recent years, and the industry's concerns about meeting demands for growth have been replaced by concerns about managing overcapacity and improving efficiency. Prospects for merchant shipping and shipbuilding therefore must be evaluated in terms of these changing trade patterns.

Because of their concerns about the viability and productivity of U.S. maritime industries as well as the future U.S. position in world trade, the House Committees on Merchant Marine and Fisheries and on Ways and Means jointly requested OTA to prepare this assessment. The committees asked OTA to undertake an analysis and forecast of long-term trends in global seaborne trade and maritime technology in relation to the U.S. maritime industry.

The assessment of Maritime Trade and Technology traces prevailing conditions and dominant trends that are important to the way the Federal Government assumes its responsibility for developing and implementing policy. This summary presents an overview of the world and U.S. maritime industries, discusses the important technical and public policy factors affecting future U.S. participation in shipping and shipbuilding enterprises, and suggests policy options for congressional consideration.

OTA received valuable assistance in the preparation of the assessment from its advisory panel, which represented a cross section of U.S. maritime industry, labor, and user interests. The panel provided critiques and advice throughout the assessment and particularly during a detailed review of the final report. Other contributors to the assessment were contractors and individual consultants who provided valuable analyses of specific topics that were integrated into the overall report. OTA sincerely appreciates the quality of work and dedication of all contributors.

OTA has found that, although there are both healthy and troubled segments of the U.S. maritime industries, all sectors are becoming increasingly dependent on Federal policy decisions. And, with increasing competition in world trade as well as shipping services to carry that trade, intervention by all governments is more and more prevalent.

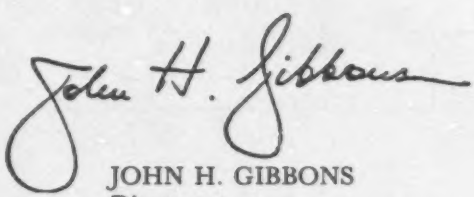

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Photo credit: Atlantic Richfield

An Assessment of Maritime Technology and Trade

INTRODUCTION

Almost all international trade in goods is transported by sea. Thus, ocean shipping plays a central and essential role in the world economy and in world trade. The United States is the world's largest trading nation, and international markets are increasingly important to U.S. industries. The United States annually engages in trade of $1 billion or more with each of 58 other countries worldwide.

The importance of world trade for the U.S. economy has increased dramatically in the past two decades. During the 1970's, the value of U.S. international trade more than doubled. Although the U.S. ratio of exports to gross national product is still below that of most other industrial countries, it stood in 1980 at 8.5 percent, nearly double the 4.4 percent of 1970. Some projections of that percentage reach 15 percent by 1990.

In 1982, world maritime trade in goods totaled 3.21 billion metric tons (tonnes), down from an all-time high of 3.77 billion tonnes in 1979. Maritime trade generally is divided into three broad categories: liquid-bulk, dry-bulk, and general cargo. Petroleum alone accounts for nearly all of the liquid-bulk trade and for almost half of the total world tonnage shipped. About one-fourth of world tonnage consists of dry-bulk commodities—principally mineral ores, coal, and grain. The remaining one-fourth consists of the variety of manufactured goods and consumer products called general cargo.

The two principal modes of ship operation are the liner mode, which serves the general cargo trade, and the bulk mode, which serves both the dry- and the liquid-bulk trades. The liner industry carries general cargo from port to port at fixed rates and on regular schedules. Modern container ships are typical of the vessels used in liner trade. The industry commonly operates within conferences—international groups of private liner companies that collectively agree on routes, schedules, rates, and other aspects of liner service. The bulk industry normally does not form conferences. It employs a variety of ships, usually on a time- or voyage-charter (rental) basis, to carry single, large-volume commodities (e.g., iron ore, grain, coal, crude oil) over fixed and sometimes long periods of time. The liner industry thus tends to manage competition among major companies while the bulk industry operates under much more open competition. The liner trades involve by far the largest portion of world trade when measured by dollar value, while the bulk trades account for the largest portion of volume or tonnage.

The world shipbuilding and operating industries, generally referred to as "maritime industries," recently have been through a major boom followed

by a drastic downturn. Prospects for early recovery are uncertain. Not only has the recent world recession reduced total trade, but overbuilding of ships—particularly oil tankers—in the 1970's has added substantially to a huge surplus of shipping capacity in the 1980's. Scrapping supertankers has become more profitable than building them, and 25 to 50 percent of the world bulk fleet is laid-up or underemployed. The world's major shipbuilders in Europe and Japan are facing serious declines in demand and turning to their governments for support. The U.S. maritime industry has been affected by this slump in world trade but not to the same extent as many other major maritime nations—primarily because the U.S. maritime industry had already declined to a minor role among the larger nations.

A variety of rapid changes over the past few decades have transformed the maritime industries of the world and of the United States in particular. In just 25 years, the U.S.-flag merchant fleet has changed from the largest and most diverse in the world to a specialized fleet of modest size, aggressively engaged in the foreign liner trades and serving a variety of domestic bulk and liner trades. Many of the U.S. maritime business interests that were dominant in U.S.-flag merchant shipping in 1950 are now owners of huge bulk fleets registered in Liberia and Panama. These fleets (known as "U.S.-controlled, foreign-flag" fleets) now carry practically all of U.S. petroleum imports and sizable proportions of our exports of coal, grain, and other key commodities. U.S. shipyards, which built virtually the entire world's merchant fleet in existence following World War II, now rarely build merchant ships but are world leaders in complex warship and offshore oil-vessel construction. Japan and Korea, presently the largest commercial shipbuilding nations, have taken shipbuilding production systems that were introduced in U.S. yards during World War II, and by combining these with modern assembly and manufacturing technologies and lower wages, have gained a sizable productivity and competitive advantage in merchant ship construction.

Photo credit: Hampton Roads Maritime Association

One of the world's largest coal export terminals at Norfolk, Va.

Photo credit: Sea-Land Industries

The world's largest privately operated containership terminal at Elizabeth, N.J., and a model for port planners the world over

Changes in the maritime industries have been accompanied by international political changes that seem to be having a significant impact on the management and economics of international shipping and shipbuilding. In recent years, there has been significantly more governmental control of trade and access to cargo than at any time in the past several decades. Of major importance is the implementation of a multinational regime to allocate liner cargoes among the fleets of importing and exporting nations, passed under the aegis of the United Nations Conference on Trade and Development (UNCTAD).

The nature of international marine transportation itself also is changing, as evidenced by the concentration of businesses in fewer, larger firms; by rapid worldwide transfer of technologies; and by more and more ship-operating firms offering intermodal rates and services, thus supporting the notion that ocean shipping is just one link in a larger integrated transportation system that includes terminals, trucking and rail.

POLICY STATUS

U.S. maritime policies have not kept pace with changes in world trade or the maritime industry. They remain aimed at conditions that prevailed in decades past. **The U.S. maritime policy framework that exists today is outdated and appears inadequate to address critical maritime problems of national concern.**

Based on this OTA assessment of maritime trade and technology, it is clear that major new or revised Federal policies are needed if the U.S. maritime industries are to remain healthy in the decades to come. If there

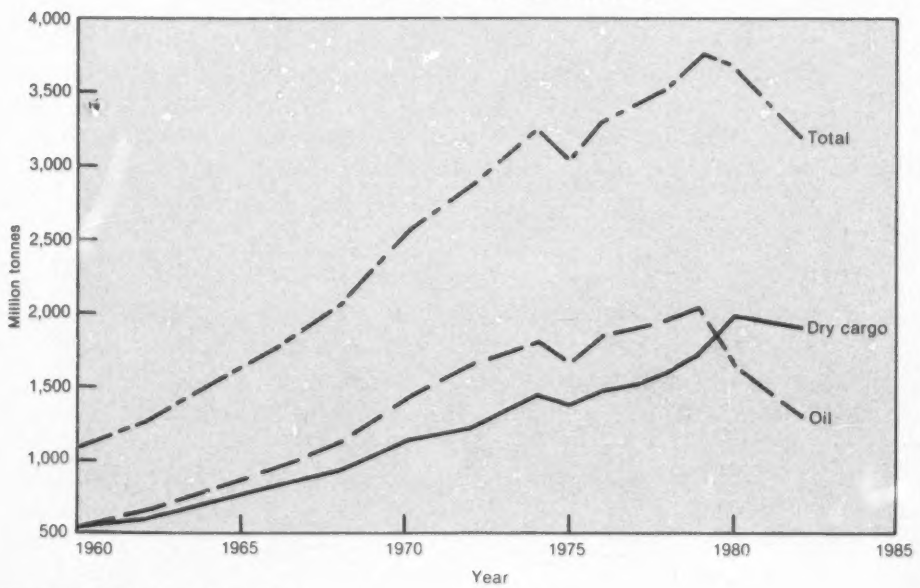
are no policy changes, most U.S. maritime industry segments probably will continue to decline in size and influence.

Trade- and cargo-allocation policies related to international shipping often are considered separately, both within U.S. Federal agencies and among international organizations. However, adequate consideration of cargo allocation would in turn make trade more efficient and effective. For the most part, U.S. shipping policies reflect historical patterns and do not cope effectively with major shifts in trading patterns and increasing governmental intervention worldwide.

The Federal Government has a wide range of policies and programs with the goal of aiding or promoting the U.S. maritime industry. **However, analysis indicates that the United States has no overall, coordinated and effective maritime policy that responds to the major trends and realities confronting the U.S. maritime industry in the increasingly competitive and complex arena of world seaborne trade. Existing maritime policies are a patchwork of measures adopted at various times to address specific needs.** They do not add up to a comprehensive and coherent policy with clearly defined purposes and elements specifically designed to achieve those purposes. In particular, there is no sharp definition of what the Federal role should be in maintaining a maritime industrial base, in assuring competition, and in coordinating national and international initiatives.

Whatever maritime policies are developed for the future, if they are to be broadly supported and effective, they will require balancing a variety of national interests. **There is a vital link between the U.S. economy and U.S. participation in international commerce of which ocean transportation**

World Seaborne Trade—1960-82



SOURCE: OECD & Fearnleys, 1982.

is an integral component. However, it is not clear what level of Government assistance or involvement in maritime affairs is in both the national interest and in the interest of a healthy, competitive enterprise. Therefore, an overriding objective of any future maritime policy is to clarify national benefits as well as benefits to any one industrial sector. Such national benefits could include:

- maximizing U.S. participation in world trade and its overall economic benefits;
- promoting international stability through trade and economic interdependence;
- maintaining technological preeminence in U.S. industries;
- providing for national defense needs;
- ensuring independence from foreign control of vital trade or shipping services;
- assuring the viability of the essential and productive sectors of the maritime industry;
- promoting fair trading practices for U.S. business interests; and
- providing an adequate level of employment, skills, and training in a vital transportation industry that is important to the national economy.

THE FEDERAL ROLE

The Nation clearly depends on international trade and shipping services to maintain a healthy economy. The Federal Government thus has an obvious interest in those areas where the public as a whole would accrue benefits. Policies to promote U.S. participation in world trade, to assure fair access to cargoes, to assure adequate and efficient shipping services, or to provide for just consideration of U.S. interests in international bodies—all fit into such a Federal role. Policy options for these purposes thus can be judged on

Grain: Seaborne Trade—1981

Main inter-area movements in million tonnes. (MMM ton-miles in brackets.) Only main routes are shown. Area figures are totals including smaller routes not shown separately.

Total trade 206 million tonnes, 1,131 MMM (000 million) ton-miles.

SOURCE: *World Bulk Trades 1981*, Fearnleys, Oslo, Norway, 1982.

the basis of how effectively the Federal role is carried out and how efficiently the national goals are pursued.

The Federal Government also may have a role related to support or promotion of the maritime industries. The extent of this role is more difficult to measure, but it is based on two possible national benefits. One is that the maritime industry provides for national security and must be measured by needs for and costs of national defense options. The second is the overall economic benefit that shipping and shipbuilding may provide the Nation as a major industrial sector in promoting or maintaining U.S. participation in world trade.

Naturally, there are a range of plausible levels of Federal promotion or support to any U.S. industry. If the support requires merely "fair" taxation or regulatory treatment, then it may be justified based on inherent benefits to an important industry and labor force. If the support requires major Federal subsidies or other outlays that the public must provide, then national benefits need to be quantified and demonstrated.

If a stronger merchant marine encourages greater opportunities for export of U.S.-produced goods, specific Federal support of the industry might be justified but must be compared to other effective ways to utilize finite Government resources. Only if the net economic gain from Government subsidy of the maritime industry were greater than the gain to the economy from equal Government support of another industry, could maritime subsidies be justified on purely economic grounds.

The rationale used by most maritime-subsidy proponents is that U.S. shipyards and the U.S.-flag merchant fleet are vital components of our national defense. The U.S. Navy historically has supported this contention. The so-called shipyard mobilization base consists of those yards that would be essential to a war effort, either in building or repairing vessels. Virtually all major merchant shipbuilding facilities are considered to be part of this base. Likewise, it is contended that during a conflict the U.S. merchant marine would have vital responsibility in logistic support for the military and carriage of goods essential to support the civilian economy at home. There is little question that these roles would have to be filled. However, a number of questions remain unresolved. The required size of the mobilization base never has been defined adequately, although a number of studies have addressed the issue. Another question is the adequacy of the fleet of U.S.-owned, foreign-flag ships or the national flag ships of friendly nations to fulfill some or all of the duties of merchant-ship support during a national emergency.

An in-depth analysis of national defense requirements is outside the scope of this assessment. However, it is important that such questions be resolved before any cohesive policy about the role of the U.S. Government in support of the maritime industry can be developed, and if it is determined that national defense is a legitimate reason for Government aid to the industry, logically such aid should be directed toward those types of yards and vessels that are most useful to the military.

THE U.S. SHIPPING INDUSTRY

Many define the present condition of the U.S. shipping industry as one of universal nonprofitability. Even with substantial subsidies, the U.S.-flag liner operators as a group showed a loss for the first quarter of 1983. Large portions of the U.S.-flag tanker and bulk fleet are in layup. Some of the most productive sectors, such as the offshore oil, tug, and barge businesses, also are now in a serious slump.

In the U.S. shipping industry, the two major distinct business sectors (liner and bulk) have very different problems and outlooks. **Policies directed toward each sector need to reflect those differences.** During 1982 and 1983, the U.S. liner industry suffered substantially from the worldwide recession, and the overall cargo volume in the key trades shrank markedly. **Some companies now are left in a difficult financial position—especially the smaller operators who are not well capitalized. On the other hand, a few of the larger companies are aggressively expanding their service and building new, large container ships to modernize their fleets.** The most prominent liner companies increasingly are engaged in the transportation of cargo to and from inland locations in which ocean-going ships serve as only one link in an overall transport system. The liner fleet has growth potential but is very dependent on new Federal policy initiatives.

Bulk companies include the shipping departments of major petroleum corporations who operate tanker fleets, as well as independent bulk-ship operators, who may operate tankers, dry-bulk carriers (ore, coal, grain), and combination ships. The U.S.-flag dry-bulk and tanker fleets face a very uncertain economic picture. Very few U.S.-flag bulk carriers are engaged in international trade because they have not been able to compete with foreign-flag operators, even with substantial subsidies. The domestic trade U.S. bulk fleet also is small and only serves what may be considered captive markets. Pressures to shift subsidized U.S.-flag tankers from the international to the domestic trades and to reduce both subsidies and preference cargoes could affect the remaining U.S. bulk-carrier and tanker fleets dramatically.

A long-term world trade outlook developed for this assessment indicates that U.S. trade volume probably will grow throughout the rest of the century, but at slower rates than in the last 10 to 15 years. Trade with developing countries, particularly in the Far East, could grow at a faster rate than total trade. However, such trade growth could be affected adversely by aggressive protectionism in the United States and abroad, particularly in the short term, as a response to the worldwide economic problems of many countries.

If the trade growth rate is slow in comparison to the previous decade, U.S. carriers will be forced to compete with rapidly growing foreign-flag fleets for the limited cargo available—and will need continually to increase service efficiency and capability. It also is likely that intermodal services will continue to expand and increase the efficiency of international trans-

port. This trend may offer opportunities for those U.S. liner operators that are in the forefront of intermodal technology and management systems.

The future of the U.S.-flag fleet is uncertain. **Some experts believe that without policy changes, the size and capabilities of the U.S.-flag fleet will decline markedly over the next 10 years.** Policies to promote growth in U.S. trade and assure fair access to all international trade for U.S. carriers naturally would benefit all sectors of the shipping industry. However, such policies would be most useful for continued success of those businesses that already have attained high productivity and now are reasonably competitive in world shipping. Such characteristics apply to certain U.S.-flag liner companies and to the U.S.-controlled, foreign-flag bulk fleet.

Several other Federal policy initiatives are also of major importance to the U.S.-flag liner operators. These include: maintenance of existing Government-impelled cargo preference; modification to the Shipping Act of 1916 granting wider antitrust immunity, which would promote higher utility of capital assets through service rationalization; and modifications to taxation policies or other financial incentives, which would allow future capitalization on a cost competitive basis with other shipping nations. Policies to promote more competitive industry capitalization are also critical to the U.S.-controlled fleet. For the already small U.S.-flag bulk fleet (tankers and dry bulk) in foreign trades, future viability appears bleak unless support is applied, either in the form of direct Federal subsidies or of cargo preference.

THE U.S. SHIPBUILDING INDUSTRY

Over the past two decades, the United States has built major merchant ships only when Federal subsidies were used to pay a large portion of the cost or when laws, such as the Merchant Marine Act of 1920, required that the ship be built in a U.S. yard. U.S. shipyards have been isolated from international competition for these types of vessels by virtue of having a protected domestic market. The U.S. shipbuilding industry today therefore is basically quite different from that of Europe, Japan, and Korea, where most of today's modern merchant fleets are built and where companies compete for orders in a world market.

However, **the United States does have a large and diversified shipbuilding industry and is foremost in construction of large and complex naval warships.** Its total employment (175,000 in 1982) is even larger than Japan's. The U.S. industry also has some very productive and technologically innovative segments, including those who build barges, tugs, supply boats, and offshore oil rigs.

The U.S. shipbuilding industry has faced a severe decline in new buildings of major merchant ships. The elimination of Federal funds for construction subsidy programs has made future prospects for commercial shipyards bleak. While the U.S. Navy has embarked on an expanded building progam, it will not require much additional shipyard capacity until 1985-86, and only the yards that specialize in major warships will benefit substantially. The trends in the industry thus are toward more U.S. Navy

work, more concentration in fewer large firms and hard times for those firms that, in the past, have depended on commercial shipbuilding subsidies. Although U.S. yards have made recent strides in improving productivity in the construction of merchant vessels, the primary focus of the industry remains on building U.S. Navy ships, which require high-technology and custom work and where productivity is not of paramount concern.

One approach to improving U.S. shipbuilding productivity would focus on developing other emerging markets for U.S. shipyards, assuming that there is little chance that the U.S. industry can reduce costs of conventional mer-

Photo credit: Avondale Shipyards, Inc.

One of the few merchant ships under construction in a U.S. shipyard during 1983

chant ships below the level of the low-wage countries. The U.S. shipbuilding industry is geared to custom work and the integration of highly technical with conventional systems. Markets for such skills may develop in the future in fields like Arctic or deepwater resource extraction. A challenge for industry and Government would be to cooperate to identify and develop the most promising markets.

OTA analysis suggests that U.S. shipyards can improve their competitive position in the world, but only with a major concerted effort on the part of both industry and the Federal Government. However, productivity improvements alone probably will never close the very large foreign-merchant-ship price differentials of today, which are partly the result of lower wages and partly the result of direct and indirect subsidies of other governments. Federal policy therefore must assume that **the future viability of U.S. commercial shipbuilding will depend on some form of Federal support.**

At present the large U.S. Navy building program is supporting the U.S. shipbuilding industry. It would be useful for policymakers now to look beyond the current U.S. Navy building program and devise a plan for U.S. shipyards at least 5 years hence. While the existing U.S. Navy program can be helpful for encouraging productivity improvements in the near term, new markets must be developed or Federal support must be increased when U.S. Navy work slackens, or U.S. shipyards will probably contract to a much smaller base.

POLICY OPTIONS

OTA analysis suggests that whatever new maritime policies are developed, a comprehensive and coordinated approach is necessary to clarify the national interest, bring effectiveness to Federal programs, and ensure consistency in any industry promotion offered. The following policies are subject to current debate and are important elements of such a comprehensive approach. Each will be discussed here and some options presented. Further analyses are contained in the policy chapters of the complete report.

Cargo Policies

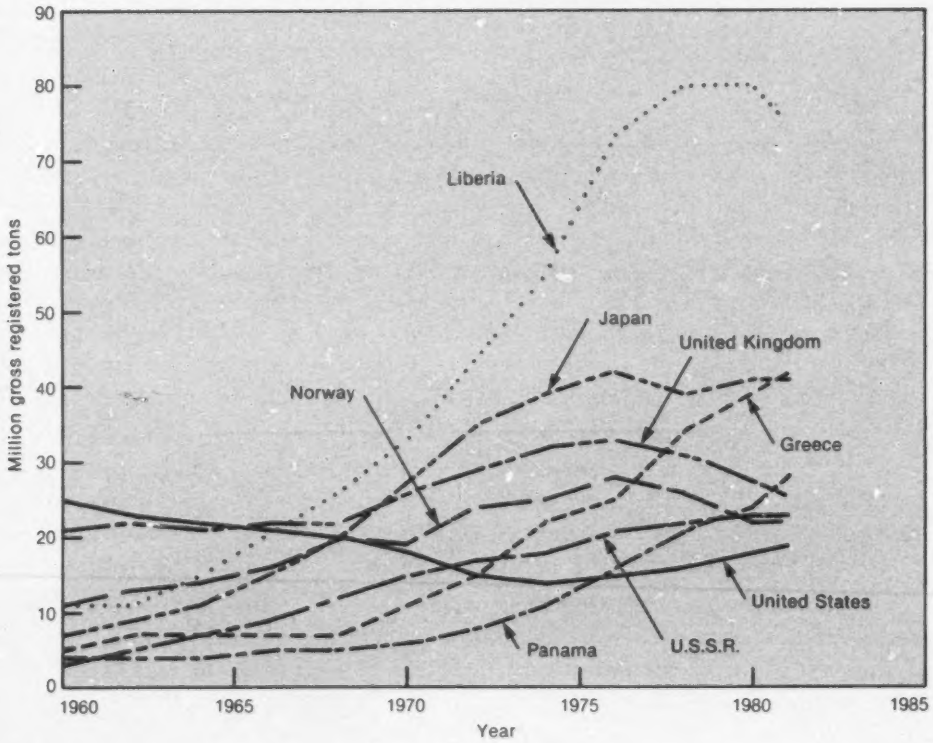
All trading nations have a self-interest in expanding their exports and controlling their imports. As trading complexities increase, governments have attempted to manage their flow of imports and exports. As nations try to manage trade policy to their best economic advantage, they tend to increase governmental involvement in shipping. Most countries have policies which unilaterally reserve some portion of their import/export cargoes for their own national fleets. In addition, many nations, particularly developing countries that are attempting both to capture more export trade and to bolster their national-flag fleets, are pushing for the establishment of bilateral and multilateral cargo-sharing agreements. The latter objectives have been achieved recently in the form of the UNCTAD Code of Conduct for Liner Operations. The requisite number of countries has ratified this code to enable

it to go into effect in October 1983. It calls for an even division of liner conference cargoes between trading partners, with a small percentage possibly reserved for vessels of other nations, if agreed by the national-flag lines engaged in the trade. The United States is not a signatory to the code and has opposed it since it was first proposed several years ago. As a result, there are concerns that U.S. carriers may be prohibited from some cargoes and that the United States may be forced out of certain trades when it is implemented.

U.S. ship operators face a significant disadvantage in dealing with countries where industry and government have established close ties and where national and corporate goals are better meshed than in the United States, which tends to disavow governmental interference in international trade and cargo allocation. U.S. shipping companies find it increasingly difficult to compete in markets that are protectionist. Many foreign governments also tend to intervene specifically on behalf of their national interests and their own carriers while the U.S. Government has usually not intervened.

There have been attempts by the United States and some of its industrialized trading partners to counter protectionist trends by working within international organizations for tariff-barrier reduction and freer trade. However, the reality is that trade is becoming more, not less, managed. Thus far, the United States has not developed a national response that would be effective in pro-

Fleets of the Leading Maritime Nations, 1960-81



SOURCE: Lloyds's Register of Shipping Statistical Tables 1981.

tecting our economic position and at the same time remain consistent with our national philosophy of free trade.

Federal policies and practices could have a profound influence on whether U.S.-flag ship operators are treated fairly by other countries and given equal and competitive rights to carry cargo. There is at present no generally accepted U.S. cargo policy because national interests are not defined and no strategies for international negotiation have been developed. Lacking such strategies, the United States has remained on the sidelines while the rest of the world defines the rules of cargo access.

To assure more equitable access to cargoes for U.S. operators in the future, Congress could:

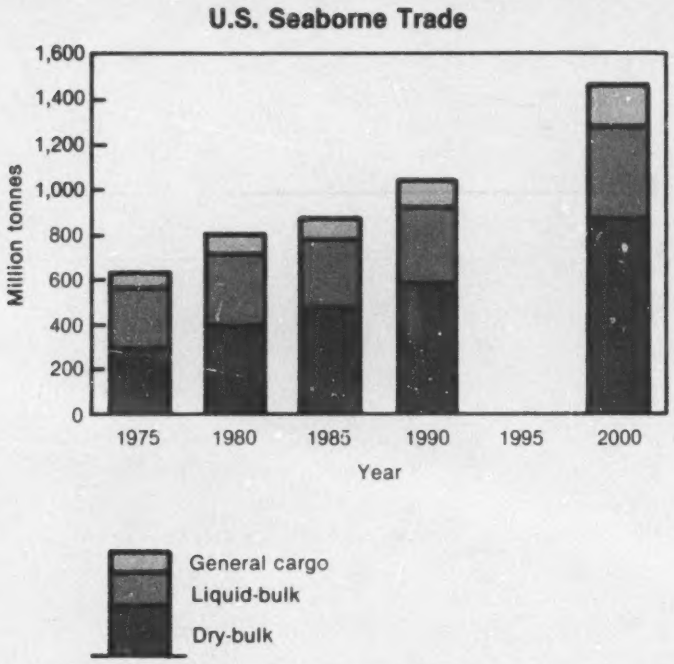
- authorize and direct appropriate agencies to devise guidelines for U.S. Government initiatives in negotiated bilateral agreements with our major trading partners including rules for maintaining certain competitive practices, for assuring fair treatment for both U.S. shippers and carriers, and for promoting future trade;
- authorize and direct appropriate agencies to develop guidelines for similar consideration of multilateral agreements on cargo access;
- define specific and comprehensive unilateral U.S. cargo reservation practices following clearly stated national interest guidelines;
- develop an overall strategy for both U.S. cargo reservation and international agreements on cargo-sharing which could be used in future negotiation.

Incentives for U.S. Ship-Operating and Shipbuilding Industries

There is widespread agreement that U.S. maritime subsidy programs of the past have been largely ineffective and counterproductive to the goal of stimulating a healthy and productive commercial maritime industry in the United States. The present administration has eliminated funding for ship construction subsidies and has sought to phase out ship-operating subsidies. **New policies are needed to substitute for these programs, however, if a Federal role of promoting U.S. maritime interests is justified by overall national interests.** The level of Federal promotion also needs to be justified by specific national benefits.

Direct subsidy policies of the past have been aimed at maritime industry promotion in general and assume that different sectors of the industry (i.e., shipbuilding, liner operators, bulk operators) could be cured by the same medicine. These subsidies have not been broadly effective. In fact, the most productive companies appear to be those who did not participate in subsidies.

The current administration has proposed several policies, including allowing foreign construction of U.S.-flag subsidized ships, that would help the U.S. liner industry. Promotion of certain U.S. liner interests is possible with indirect incentives, and this type of approach appears to be consistent with other administration policies. Also, indirect subsidies such as loan guarantees to U.S. operators have been encouraged. The shipbuilding industry, however, has not been encouraged by recent administration maritime policies. Except



SOURCE: Wharton Econometric Forecasting Associates.

for the large Navy building program, no Federal incentives have been proposed. Since the shipbuilding sector was so dependent on subsidies in the past, it is difficult for these companies to plan adequately for a future with no Federal support.

Past incentives in the form of loan guarantees appear to have been more successful than direct subsidies in promoting investment in new vessels and in covering broad sectors of the maritime industry. Both builders and operators claim to have benefited from such an approach.

Future policies concerning industry support, if deemed to be in the national interest, could include consideration of which maritime sectors can benefit from each type of promotional effort and how Federal support can encourage high productivity and efficiency. If Federal incentives for the maritime industry are judged consistent with national goals and benefits, Congress could:

- revitalize Federal loan guarantee and financing assistance programs for industry sectors that could utilize such incentives to improve productivity, to expand, to increase profitability, or to enter new markets;
- devise new Federal subsidy programs directed toward sectors that must compete directly with subsidized industries of other nations, including productivity enhancement incentives.

If, however, no justification for Federal assistance to the maritime industry can be made, Congress could:

- phase out all subsidy programs and Federal requirements related to subsidies and allow industry to compete on the open market without Federal intervention.

In any case, it appears important for Congress to:

- define specific national defense needs in terms of a shipbuilding base, an operating fleet, and a reserve fleet, and develop a funding program to maintain each utilizing either Government or defense expenditures for that portion of the base that is commercially uneconomic.

Regulatory Systems

It is difficult for U.S. ship operators to compete with foreign operators when international rules of conduct do not match traditional U.S. concepts, which give the Government the role of protecting the public against fixed-pricing or business cartels. In many other major maritime nations, the industry not only is allowed but also encouraged by the government to collaborate. A bill now in Congress seeks to amend the 1916 Shipping Act, assure broader antitrust immunity, and provide other incentives for improving the capability of U.S. operators to compete with foreign carriers. This issue has been debated in Congress for the past several years, and some resolution appears near. Whatever the outcome, it will continue to be important for U.S. policymakers to evaluate international rules of conduct for U.S. and foreign operators and to strive to develop an approach so that U.S. operators can compete on equal terms with foreign carriers.

Passage of some form of regulatory changes is clearly in the interest of the major U.S. liner operators. Proper consideration of U.S. shipper interests and broader goals of enhancing U.S. trade in the future are equally important. **U.S. participation in world maritime trade and shipping likely will depend on how well our regulatory policy both protects the national interests and allows for effective competition internationally.** Congressional choices include the following alternatives:

- pass the Shipping Act of 1983 and follow with careful oversight of how well carriers, shippers, and the general public are served;
- develop an approach to international shipping regulations that could be presented to other nations for consideration in the future, possibly including cargo-sharing options as well;
- make no changes to the law but monitor more carefully Federal regulatory policies.

Taxation Policies

Taxation policies for U.S. shipping interests are based on sometimes conflicting goals of providing equivalent advantages to industries that must compete in the international market and of assuring fairness and equity among U.S. businesses. Past taxation policies for shipping (e.g., the Capital Construction Fund) have sought to encourage investments in new U.S. built ships through tax deferrals and to strengthen the U.S. merchant marine's competitive position. Future taxation policies require careful analysis of the many approaches available and in use to ensure that targeted industry sectors receive the intended benefits.

This assessment includes an overview of Federal taxation policies related to shipping, but further analysis of alternative tax treatments is necessary. However, Congress could address taxation policies for shipping in a comprehensive way, including:

- a review of U.S. industry treatment compared with other competitive maritime nations;
- consideration of tax-incentive goals such as investment in new ships and equipment, business for U.S. shipyards, modernization of the fleet, maintenance of a defense base, or expanding U.S. markets; and
- review of tax treatment versus the sectors that receive principal benefits considering U.S.-flag fleet, effective U.S.-controlled fleet, U.S.-domestic fleet, and U.S. shipyards.

Federal Research and Development

OTA analysis suggests that there is a need for maritime research and development (R&D). An important part of such research is a continuing assessment of those areas in which technological innovation can be applied to acquiring a greater share of the world maritime transportation market and a greater share of world shipbuilding orders. Additionally, the R&D should include an evaluation of the work ongoing in marine and other fields (both U.S. and foreign) that can contribute to commercial marine innovation. It also is important to incorporate these innovations into design, production, and training programs that would lead to building and manning ships, and selling ships to other nations to give the United States an improved posture in world shipbuilding and ship operations. Both long-term financial support and a research plan are needed to assure effective utilization of resources.

There are several basic problems associated with existing Federal maritime R&D programs. First, since there is no comprehensive policy defining the Federal role in maritime affairs in general, there is also no clear policy regarding the Federal role in maritime R&D. **While the Federal approach to industry promotion has changed drastically in recent years, little attention appears to have been given to the resulting impact on R&D. Thus, the R&D program now under the authority of the Maritime Administration has no clear focus or set of long-range goals.** This program is much too small to be expected to address in depth the broad range of technical opportunities in the maritime transportation business; furthermore, there is no rationale for the selection of projects as worthy of Federal support while others are left for industry or some other research enterprise.

Congress could define a more specific Federal role in maritime research before additional funds are allocated and a new program is designed. As discussed in this assessment, near-term needs for energy-saving and automation technology are being addressed by numerous industries and private research groups worldwide. New maritime technologies have been developed in a number of other countries and are readily adaptable. The U.S. Navy and other Federal agencies spend considerable funds on basic and applied maritime research problems, and applicable data can be transferred. The Na-

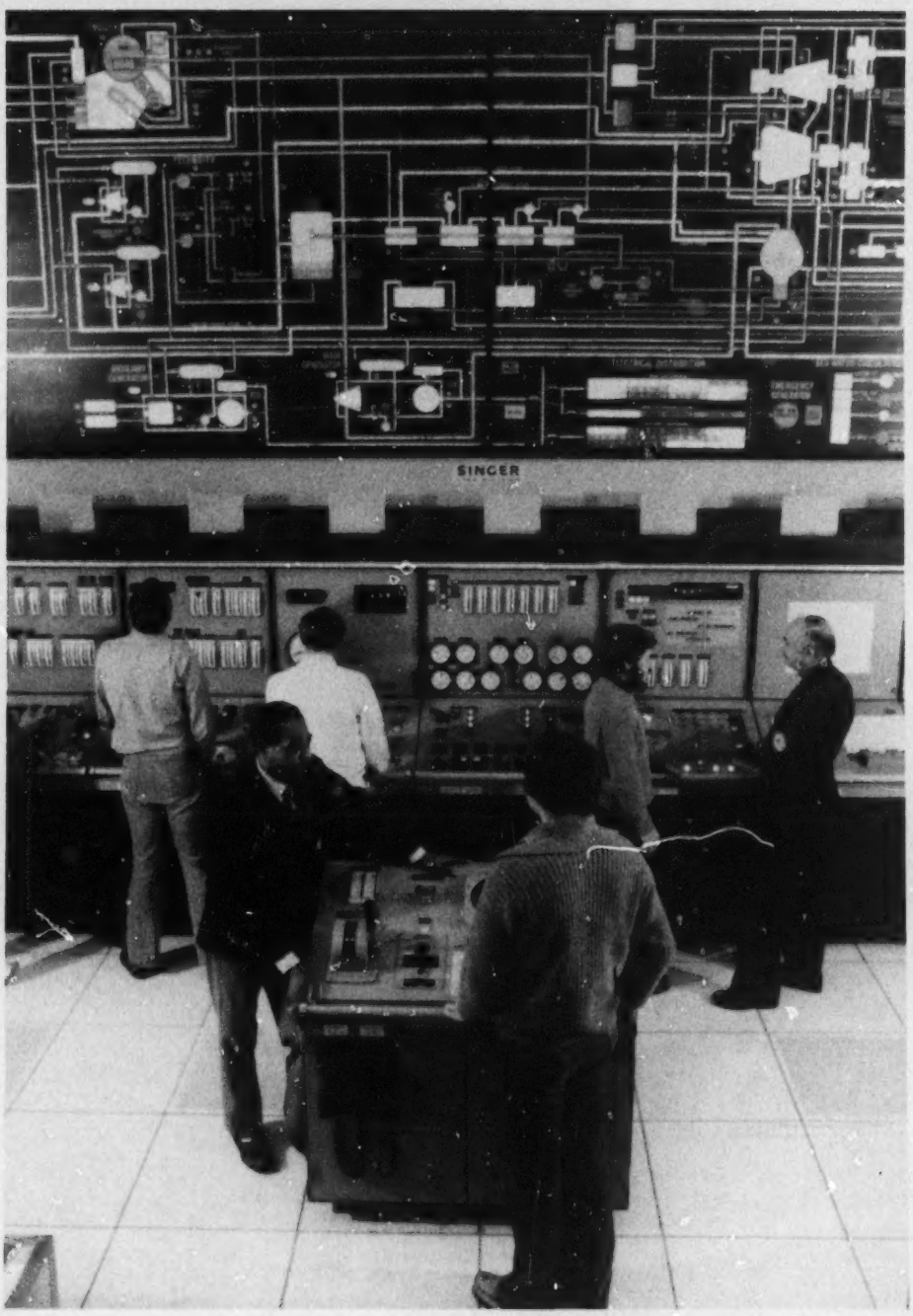


Photo credit: Maritime Institute of Technology

The Masters, Mates and Pilots Union operates this technology training facility for its members

tional Shipbuilding Research Program has identified promising areas for improving U.S. shipbuilding productivity. Elements of a congressionally defined Federal role in future maritime R&D could include:

- identifying R&D objectives as a subset of an overall maritime policy;
- determining what U.S. industry can do better itself and formulating indirect incentives for industry R&D;
- stimulating coordination and transfer of technology within the industry and from military, foreign, and other sources; and
- focusing on high-risk areas and long-range problems that are not adequately addressed by industry or elsewhere, the solution of which could contribute to national goals.

In addition to the definition of proper Federal support for maritime R&D, Congress may also wish to consider new or modified institutional arrangements to encourage, coordinate, and foster R&D with either or both private and Government support.

Policy Coordination

It has been difficult in the past to develop a comprehensive policy that integrates the important aspects of trade promotion, cargo access, maritime regulation, industry incentives, and maritime research. Federal agencies, lacking a coordinated approach, often have sought conflicting goals. While one agency seeks to prosecute alleged antitrust activities, another seeks to allow more industry cooperation. While one agency seeks to broaden cargo preference policies, another seeks to eliminate preference for U.S.-flags. While the U.S. Navy claims the need for an extensive commercial shipbuilding industrial base, it shifts the execution of such a policy to the Maritime Administration which has been able neither to devise a strategy nor provide the resources to maintain such a base.

Congress could seek to resolve some of the major conflicts through comprehensive legislation or through a joint consideration of a range of legislative proposals. While this approach could consume a great deal of time, it may offer compensating long-range benefits.

Even without comprehensive policy coordination, it appears important as a minimum to ensure the coordination of trade and shipping policies at the Federal agency level. Trade policies and cargo policies related to international shipping are often considered separately, both within the U.S. Federal agencies and among international organizations. Those policies can have a direct impact on future international trade and the participation of the United States and its shipping industry in that trade.

The current debate between those advocating completely free trade or free access to cargoes and those advocating degrees of government intervention to protect domestic industries will undoubtedly continue. For example, the

national value of a domestic industry can sometimes convince governments to provide certain levels of protection. Even though industries and governments publicly state their opposition to protectionism, they often do not apply those principles to themselves. In addition, reaction to other governments' policies will often also bring restrictions on trade.

The growing involvement of governments and international organizations in trade and shipping policies and growing protectionism worldwide requires the United States to develop and coordinate those trade and shipping policies which serve the national interest. It is also vital for the United States to implement policies which can remain consistent over the long terms that many international issues require for resolution.

NOTE: Copies of the full report, "An Assessment of Maritime Technology and Trade," can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, GPO stock No. 052-003-00931-5.

Notes

Assessments in Progress as of October 1983

Effects of Technology on the American Economic Transition
Strategic Responses to an Extended Oil Disruption
Potential U.S. Natural Gas Availability
Nuclear Power in an Age of Uncertainty
Technologies To Reduce U.S. Materials Import Vulnerability
International Competitiveness in Electronics
Strategic Command, Control, Communications, and Intelligence Systems
Technology Transfer to the Middle East
Technologies To Sustain Tropical Forest Resources
Technology, Public Policy, and the Changing Structure of American Agriculture
Evalution of Agent Orange Protocol
Health and Safety Control Technologies in the Workplace
Medical Technology and Costs of the Medicare Program
Federal Policies and the Medical Devices Industry
Status of Biomedical Research and Related Technology for Tropical Diseases
Blood Policy and Technology
International Commercialization of Biotechnology
Impact of Technology on Aging in America
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